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W81XWH-15·1-0377

TITLE:
Targeted On-Demand Team Performance App Development

PRINCIPAL INVESTIGATOR:
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CONTRACTING ORGANIZATION:
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14. ABSTRACT

Study Aims: What are the separate and collective effects of: 1) Individual team member factors (predictor variables) on the clinical accuracy of team performance, team cohesiveness, and team morale in the management of an emergency medicine patient?; 2) Team factors (predictor variables) on the clinical accuracy of team performance, team cohesiveness, and team morale in the management of an emergency medicine patient; 3) To what extent does the clinical accuracy of team performance in the management of an emergency medicine patient correlate with team cohesiveness and team morale?; 4) Which of these individual and team predictor variables best inform the development of targeted App based team training? Summary of Approach: Empirical data from 60 emergency medicine teams will be collected and analyzed using multiple regression to evaluate the relative importance of nine (9) individual predictors and seven (7) team predictors on three criterion dimensions of team performance. These data will inform the design and development of a team training App that targets these most impactful performance factors. Accomplishments: 1) IRB documentation contracts complete from six sites; 2) CareAssess system developed; 3) Standardized patients hired and trained; 4) Simulator development completed, tested and verified for data collection; 5) Data collected from three sites; 6) Preliminary analysis indicates larger than estimate effect size and study is sufficiently powered for generalizable outcomes. Data collection ongoing, to be completed Q2 2017.

15. SUBJECT TERMS					
Team Characteristics, Urgent Emergent Care Teams, Emergency Medicine Teams, Impactful Team Factors, Team Training, Team Optimization, Team Performance Improvement, Emergency Medicine Team Simulation, Inter-professional Teams, Healthcare Teams.					
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INTRODUCTION: The central hypothesis of the study is that a regression analysis evaluating the relative importance of individual and team factors on team performance in an Emergency Medicine context will provide a framework for developing targeted computer-based, smart-technology training solutions. The resulting solutions will be adaptable for applicability to all types of military and civilian healthcare teams.

- **KEYWORDS:** *Team Characteristics, Urgent Emergent Care Teams, Emergency Medicine Teams, Urgent Care Teams, Impactful Team Factors, Team Training, Team Optimization, Team Performance Improvement, Emergency Medicine Team Simulation, Interdisciplinary Teams, Inter-professional Teams, Healthcare Teams.*

- **ACCOMPLISHMENTS:**
  - **What were the major goals of the project?**

Task		Description	Progress
1	Project Management	Administration, oversight and management of all program tasks, expenditures, project reporting, compliance, security assurances, data controls, program and grants office engagement.	On Going
2	Start-up	Establish institutional reporting charts, financial and project management protocols. Create, complete, and submit all documentation for program office and designated Institutional Review Boards. Hire and train program support personnel, including research and site coordinators, performance assessors, and administrative personnel.	Complete
3	IRB /Oversight	Submit, respond and secure Institutional Review Board Approval (University of Central Florida).	Complete
		Submit, respond and secure Institutional Review Board Approval: 1. Brigham & Women's Hospital, Massachusetts 2. Rhode Island Hospital, Rhode Island 3. New York University School of Medicine, New York 4. Eastern Virginia Medical School, Virginia 5. Palmetto Health, South Carolina 6. Banner Health, Arizona	UCF Completed Complete
		Submit, respond and secure approval from Human Research Protection Office (HRPO)	Pending
4	Procurement	Procure project equipment and supplies, warranties for mannequin simulators.	Complete
5	Site Scheduling	Schedule data collection events at each participating site, including travel and logistics arrangements for personnel and equipment.	On time for scheduled sites
6	Recruit Subjects	Recruit subjects at each participating site and schedule their participation at specified data collection events.	On Schedule
7	Program Scenarios	Document simulated Emergency Medicine event for all sites, including: 1) Simulator function and response progression; 2) Simulated patient scripts; 3) Sequencing of clinical presentations during events; 4) Flow/Timing of clinical occurrences during event; 5) Hand-off instructions; 6) Ancillary resources required per site.	Complete

Task		Description	Progress
8	Recruit Simulated Patients	Recruit simulated patients at each participating site, train them for their required role, and schedule their participation at specified data collection events.	Complete
9	Secure Data Management	Establish data management protocols and set up file management using encryption and a secure server.	Complete
10	Customize Data Collection App	Modify CareAssess App to provide customized, secure data collection (individual, team factors and team performance).	Complete
11	Set-up Individual and Team Factors Data Measurement	Verify the measurement systems for individual and team factors. Prepare data collection App to include assessment items for individual and team factors.	Complete
12	Verify Performance Data Measurement	Verify the measurement system for team performance. Prepare data collection App to include team performance assessment items.	Complete
13	Confirm/Test Data Collection System	Test data collection system to assure functionality, accuracy, and security.	Complete
14	Data Collection - Site 1	Eastern Virginia Medical School: Conduct data collection per protocol at the site.	Complete
15	Data Collection - Site 2	University of South Carolina Palmetto Health: Conduct data collection per protocol at the site.	Withdrawn
16	Data Collection - Site 3	Brown University Rhode Island Hospital: Conduct data collection per protocol at the site.	Scheduled
17	Data Collection - Site 4	Harvard University Brigham and Women's Hospital: Conduct data collection per protocol at the site.	Scheduled
18	Data Collection - Site 5	NYU-Langone Medical Center: Conduct data collection per protocol at the site.	Complete
19	Data Collection - Site 6	Banner Health System: Conduct data collection per protocol at the site.	Scheduled
20	Data Analyses	Verify all data, conduct descriptive and inferential statistical analyses, and examine any resulting qualitative data for trends or connections to statistical outcomes.	On Schedule
21	Predictive Modeling	Conduct regression analyses to determine predictive models. Identify principle components and examine for statistical and practical significance.	On Schedule
22	Performance Specifications	Document standards of team performance measured for the emergency medicine context of the study. Identify the principle predictors related to these performance standards.	On Schedule
23	Training Specifications	Use the predictive data to identify objectives for training, or for facilitating performance improvement, to support the development of optimal team proficiencies. Identify best technology-based solution for distribution.	On Schedule
24	Technology Specifications	Specify the technology requirements that will facilitate the team performance improvement specified in task 23.	On Schedule
25	Publications / Presentations	Create, submit, and present the outcomes from the study at peer-reviewed conferences. Write, submit, and publish the outcomes from the study in peer-reviewed journals.	On Schedule
26	Project Reviews	Prepare documentation for and participate in scheduled project reviews.	On Schedule
27	Quarterly Reports	Prepare and submit quarterly reports to the program office.	On Schedule

Task		Description	Progress
28	Final Report	Prepare and submit final report to the program office.	On Schedule

- **What was accomplished under these goals?**
- *1) IRB documentation contracts complete from six sites; 2) CareAssess system developed; 3) Standardized patients hired and trained; 4) Simulator development completed, tested and verified for data collection; 5) Data collected from three sites; 6) Preliminary analysis indicates larger than estimate effect size and study is sufficiently powered for generalizable outcomes.*
- **What opportunities for training and professional development has the project provided?**
  Data are still being collected and therefore no analyses have been conducted as of yet.

- **How were the results disseminated to communities of interest?**
  Data are still being collected and therefore no analyses have been conducted as of yet.

- **What do you plan to do during the next reporting period to accomplish the goals?**
  Complete data collection and formalize findings regarding the individual and team factors most impactful to team performance, providing a foundation for the development of targeted training solutions.

- **IMPACT:** *Describe distinctive contributions, major accomplishments, innovations, successes, or any change in practice or behavior that has come about as a result of the project relative to:*

- **What was the impact on the development of the principal discipline(s) of the project?**
  Data are still being collected and therefore no analyses have been conducted as of yet.

- **What was the impact on other disciplines?**
  Data are still being collected and therefore no analyses have been conducted as of yet.

- **What was the impact on technology transfer?**
  Nothing to Report

- **What was the impact on society beyond science and technology?**
  Data are still being collected and therefore no analyses have been conducted as of yet.

- **CHANGES/PROBLEMS:** *We experienced substantial delays resulting from the contractual issues between UCF and the six data collection sites, followed by IRB issues between the same. We are on track to complete data collection and analyses as scheduled due to reallocating study team effort.*

- **Changes in approach and reasons for change**
  There have been no changes in approach and project work is proceeding in accordance with the project plan, adjusted for delays in scheduling.

- **Actual or anticipated problems or delays and actions or plans to resolve them**
  All delays resulting from contractual and IRB issues have been resolved and work effort adjusted to accommodate scheduling within the project funding period.

- **Changes that had a significant impact on expenditures**
  Delays in scheduling data collection resulted in less than projected expenditures during this reporting period. These will be forwarded to the next reporting period.

- **Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents.**
  - *There have been no significant deviations, unexpected outcomes, or changes in approved protocols for the use or care of human subjects during the reporting period. The project does not include the uses of vertebrate animals, biohazards, and/or select agents.*

- **Significant changes in use or care of human subjects:**

No changes.

- **Significant changes in use or care of vertebrate animals.**
  N/A
-
- **Significant changes in use of biohazards and/or select agents.**
  N/A

- **PRODUCTS:**
  - **Publications, conference papers, and presentations**
    Nothing to Report at this time. Data are still be collected.

- **PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS**
  - **What individuals have worked on the project?**

***Example**:*

Name:	*Pamela Andreatta*
Project Role:	*PI*
Researcher Identifier (e.g. ORCID ID):	*0000-0002-7403-812X*
Nearest person month worked:	*12*
Contribution to Project:	*Dr. Andreatta is responsible for project conception, data collection, data analysis, coordination with site CoPIs, project decision making related to implementation and determination of outcomes impact(s), report reviews, development of data driven resources for training products, and communication with administrative, legal and financial entities within the institution of record (UCF) and the six collaborating sites.*
Funding Support:	*N/A*
Name:	*Lisa Hernandez*
Project Role:	*Program Coordinator*
Researcher Identifier	*0000-0002-9736-8957*
Nearest person month worked:	*9*
Contribution to Project:	*Ms. Hernandez has worked as the research coordinator for the entire project and is responsible for recruitment, coordinating site personnel, and reporting.*
Funding Support:	*N/A*
Name:	*Kirsty Freeman*
Project Role:	*Research Coordinator*
Researcher Identifier	*0000-0002-2241-2933*
Nearest person month worked:	*4*
Contribution to Project:	*Ms. Freeman prepared simulation scenario documentation, standardized patient recruitment and training, and contributed to site scheduling and IRB preparation.*
Funding Support:	*N/A*

- **Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?**
  Nothing to Report.

- **What other organizations were involved as partners?**
  - *Banner University of Arizona, Phoenix, AZ*
    - *Facilities*
    - *Collaboration*
    - *Personnel exchanges*
    - *Subject Recruitment*

  - *New York University, Langone Medical Center, New York, NY*
    - *Facilities*
    - *Collaboration*
    - *Personnel exchanges*
    - *Subject Recruitment*

  - *Brown University, Rhode Island Hospital, Providence, RI*
    - *Facilities*
    - *Collaboration*
    - *Personnel exchanges*
    - *Subject Recruitment*

  - *University of South Carolina, Palmetto Health, Columbia, SC*
    - *Collaboration*

  - *Eastern Virginia Medical School, Sentara Hospital, Norfolk, VA*
    - *Facilities*
    - *Collaboration*
    - *Personnel exchanges*
    - *Subject Recruitment*

  - *Harvard University, Brigham and Women's Hospital, Boston, MA*
    - *Collaboration*

- **Conclusions**
  - *Data are still being collected and therefore no analyses have been conducted as of yet.*

- **SPECIAL REPORTING REQUIREMENTS**
  - **Quad Charts:** *Included.*

- **APPENDICES:**
  - Appendix 1: Quad Chart
- **MARKING OF PROPRIETARY INFORMATION:** N/A

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Appendix

Appendix 1: Quad Chart

Targeted On-Demand Team Performance App Development

DM142019 Quarterly Report

W81XWH-15-1-0377

PI: Pamela Beth Andreatta **Org:** University of Central Florida **Award Amount: $1,149,702**

Study Aims

What are the separate and collective effects of:

- Individual team member factors (predictor variables) on the clinical accuracy of team performance, team cohesiveness, and team morale in the management of an emergency medicine patient?
- Team factors (predictor variables) on the clinical accuracy of team performance, team cohesiveness, and team morale in the management of an emergency medicine patient?
- To what extent does the clinical accuracy of team performance in the management of an emergency medicine patient correlate with team cohesiveness and team morale?
- Which of these individual and team predictor variables best inform the development of targeted App based team training?

Summary of Approach

Empirical data from 60 emergency medicine teams will be collected and analyzed using multiple regression to evaluate the relative importance of nine (9) individual predictors and seven (7) team predictors on three criterion dimensions of team performance. These data will inform the design and development of a team training App that targets these most impactful performance factors.

Accomplishments: 1) IRB documentation contracts complete from six sites; 2) CareAssess system developed; 3) Standardized patients hired and trained; 4) Simulator development complete and in testing, verified for assessment; 5) Data collected from two sites; 6) Preliminary analysis indicates larger than estimate effect size and study is sufficiently powered for generalizable outcomes.

Timeline and Cost

Activities / CY	15	16	17	
Gather all assessment mechanisms				
Collect empirical data				
Multiple regression analyses				
Definition of training focus				
Estimated Budget ($1,149,702)		**$616K**	**$534**	

Updated: 01/30/2017

Goals/Milestones

CY15 Goal – Complete

CY16/17 Goals – Data collection and analysis

- Conduct data collection events at the confirmed study sites.
- Perform multiple regression analyses to determine the relative importance of predictor variables on team performance.
- Formalize findings regarding the individual and team factors most impactful to team performance, providing a foundation for the development of targeted training solutions.

Comments

We experienced substantial delays resulting from the contractual issues between UCF and the six data collection sites, followed by IRB issues between the same. We are on track to complete data collection and analyses as scheduled due to reallocating study team efforts. **Budget Expenditure**

Projected Expenditure to Date: $921K

Actual Expenditure to Date: $844K